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THE HOPI IN RELATION TO THEIR PLANT ENVIRONMENT

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The country of the Hopi, in northeastern Arizona, is arid and semi-desert. From the last stronghold of this people on the precipitous boat-shape mesas of the high plateau, offshoots of the mountain knots of the Carrizos, one sees only barrenness, but barrenness painted beyond description. To the south the strange, fantastic outline of lava-capped buttes; to the west, beyond the plain, the faint line of the Mogollones, 110 miles away, flanked by the mighty mountain mass of the San Francisco, and to the north and east mesa after mesa fading into the horizon.

A nearer view of the plain reveals a waste of sand, sparsely dotted with the characteristic vegetation of the arid region and cut by gullies and washes, which rarely by the good will of the rain-gods give a glint of water. A few cottonwoods among the cornfields in the beds of the washes delight the eye by their dark green foliage, amid so much desolation, while on the distant mesas scattered cedars have a foothold.

Clear air, the wonderfully blue sky, and the effect of the bright sun on the many-tinted sandstone make a landscape which the dullest eye must behold with admiration.

As has been pointed out by my colleague, Dr Fewkes, the aridity of the climate has had a profound effect on the religious beliefs and practices of the Hopi. To the traveler going for the first time among the white people experiencing the severe probation of this region, water would seem to be the chief good. One might think that no conversation was ever carried on in

Arizona in which the subject of the lack of water was not a primary topic.

The rainfall is less than 10 inches per annum in the years when it rains. The snows of winter are depended on to start the spring vegetation. In August there are local thunder showers, which seem as a rule to generate over the San Francisco peaks on the west or over high mountains on the east. These cause the washes to run locally, but rarely do the washes "run through" to the Little Colorado.

Often these storms are accompanied by so much wind that the clouds are dissipated before reaching the mesas. On the strength of a storm of this character our party were libelled by the natives as being altogether bad, because we brought the wind and kept away the rain.

The wind-storms of this region are indescribable, being one of the worst characteristics of the climate. The heaviest gales are in the spring, when the wind accompanied by sand cuts the tender growths to pieces.

The winters are quite cold and windy, beginning with frosts about the close of September and often biting the early vegetation in the spring.

Owing to the elevation (6,500 feet) of Tusayan, the extreme radiation causes cool nights, which are not conducive to vegetal growth, especially as there is rarely dew.

Such is the province of Tusayan, where dwell the Hopi or "Peaceful people," driven step by step by hereditary enemies from more favorable regions centuries ago. They seem to have adapted themselves to the conditions perfectly, finding in this desert all that goes to make their life happy.

The Hopi are practically vegetarians. There is necessarily a scarcity of animal life in the desert. Sporadically wild game appears in their dietary in the shape of an occasional rabbit, prairie dog, or rat. The annual rabbit hunt of the Flute fraternity last summer, in which 25 horsemen and numerous footmen beat over a number of square miles of country, produced one specimen. Occasionally a sheep or goat, meat bought of the Navaho, or a burro varies the menu of the Pueblo.

There is quite a contrast between the vegetarian Hopi and the meat-eating tribes like the Apache and Navaho, and the contrast extends to physique and character, to roving and seden-

tary life, to agriculture and hunting, and to skill in the arts. This also points to the distinct origin of the Hopi under more favorable culture.

If the Sun is the father of the Hopi, then Corn is their mother. The Ceylonese are said to know sixty ways of cooking rice; the Hopi seem to have as many for corn. There are many interesting matters connected with the cultivation and uses of corn which cannot be entered into here. A sidelight on the frugality and farsightedness of the Hopi is shown by their storage of a reserve supply of corn for two years.

This leads to the observation that the food plants useful to the Hopi are (1) plants under cultivation, both native and acquired, and (2) plants the usufruct of nature. The Hopi brought from their priscan home corn, beans, melons, squash, cotton, and some garden plants. They have acquired peaches, apricots, wheat, and a number of other plants which they infrequently cultivate.[1] Of peaches they are extravagantly fond, and every village has orchards. As the crop failed last year, one of our Indian workmen at Winslow invested all his earnings in peaches, which he would have to carry 80 miles north to his native village. The apricot, of which I saw but a few trees, does not bear, probably from the lack of a fertilizing insect. Very little wheat is raised and that by the Oraibi, at their agricultural summer village of Moenkopi, where cotton also is grown.

Having plants which form the food-supply of the great civilized nations, one might think that the Hopi would be independent of or would disregard the native plants around them. On the contrary, there is almost no plant which the Hopi does not use in some way and no plant to which they have not given a name.

It is true that the Hopi extend their environment by long journeys for various substances. Every berry patch for many miles around is known and visited; a journey of 200 miles or so for salt from the Grand canyon, wild tobacco from the Little Colorado, sacred water from Clear creek, or pine boughs from San Francisco mountain, the home of the snow, is thought of

[1] The Hopi plant corn, watermelons, muskmelons, onions, beans, gourds, chili, sunflowers, squashes, wheat, sorghum, tomatoes, potatoes, cotton, grapes, pumpkins, garlic, coxcomb, coriander, saffron, tobacco, peaches, apricots, and nectarines. They will try any seed that is given them, and among their numerous requests the demand for seed is prominent.

little moment. To my knowledge, an Oraibi man made a continuous run of 160 miles as bearer of a note and answer. The knowledge of the resources of a vast territory possessed by the Hopi is remarkable, and the general familiarity with the names and uses of plants and animals is surprising. Even small children were able to suply the names, corroborated later by adults.

The ancient Hopi were apparently in nowise inferior to their descendants in these matters, as was proven by the excavations undertaken by our party last summer.

In the remains of any ancient culture, stone and bone relics stand as surviving a multitude of other articles which have perished. In many cases even bone, horn, and shell have perished and stone only has endured. It would seem that in many or most cases stone implements represent a very small part of the whole culture. While stone implements are welcome as some clew to the life of a prehistoric people, they are merely better than nothing. Pottery, carvings, and metal make the story somewhat clearer.

There is a tendency to lay too much stress on collections of stone implements *per se*, while their main interest is in their rehabilitation by surviving usages in the present.

These remarks are evoked by a field study of the Hopi tribe of northeastern Arizona with regard to their ethnobotanical and zoological environment and by a comparison of the stone relics found on the surface and in the ruinous dwellings of three ancient Hopi pueblos with the relics of softer, more perishable textures found in the cemeteries of the same pueblos.

In fact, there are some environments in which stone or imperishable materials do not exist. Imagine, for example, the culture of Mr Cushing's ancient Floridians graded by the survival of the stone or shell artifacts which they possessed.

The collection of plants made last summer forms a basis for the ethnobotany of the Hopi. It comprises about 140 species of indigenous plants, with native names and uses, extending the collection made by Dr Fewkes, the account of which was published in the *Anthropologist* for January, 1896. With Dr Fewkes' permission a number of the spring plants in his list have been incorporated in the following list for the sake of completeness.

The determination of the plants was made by Dr J. N. Rose, of the National Museum. The collection, neatly mounted and

catalogued, is regarded as worthy of being placed in the national herbarium.

These plants fall under a number of classes, according to their uses for food, architecture, dress and adornment, domestic life, domestic arts, agriculture, medicine as folk medicine and empirical medicine, religion, and folk-lore.

Food

Kwákwi, Sporobolus cryptandrus strictus Scribn. Seeds ground with corn to make a kind of cake greatly enjoyed by the Hopi.

Shíbna, Astragalus pictus filifolius Gray. Roots eaten for food.

Tăichima, Pectis angustifolia Torrey. Much sought after and enjoyed boiled with green corn (shammi). The Zuñi also eat it.

Tămi, Cleome integrifolia T. & G. Leaves boiled with green corn.

Tăminúngiwa, Chamæsaracha coronopus Gray. Berries are eaten.

Wikiákshopi, Epilobium coloratum Muhl. Used in making bread.

Wiwa, Acanthocheton Wrightii Torr. Cooked as greens with meat. It is known as the "ancient Hopi food," and is gathered and strung in long bunches, which hang in nearly every house. The Hopi recount that this plant has warded off famine a number of times, springing up as it does before the corn is filled.

Worshtusha, Panicum obtusum H. B. K. Seeds eaten ground with corn.

Ŭñátki, Atriplex argenteum Nutt. The salty leaves are boiled with fat and eaten; "very sweet." This is the earliest spring plant used for food (Fewkes).

Katókia, Dicoria Brandegii Gray. Flowers and seeds ground up and eaten.

Kŏtóki, Chenopodium cornutum B. & H. Seeds and flowers eaten, the former ground and mixed with meal to make dumplings wrapped in corn-husk and called somipiki.

Kĕbi, Lycium pallidum Múrs. The berries, which are much desired, are eaten raw or are dried for winter use.

Küsüñ'a, Dalea lanata Spreng. The roots are wholesome for food. They are scraped and eaten raw as a sweet.

Lakápa (probably Spanish), Phoradendron juniporinum Engelm. Used as a substitute for coffee.

Lĕhü, Eriocoma membranacea (Pursh) Beal. Seeds used in ancient times for food.

Mashilátshi, Solidago missouriensis Nutt. The young leaves are eaten with salt.

Müáñtoshaba, Poliomintha incana Gray. The leaves are boiled and eaten; the flowers are rubbed up and used as a flavor, which the Hopi say "tastes like brown sugar." The Mentha canadensis is also eaten as a relish.

Nünü, Sporobolus cryptandrus flexuosus Thurb. Seeds used for food.

Patáñwuba, Reverchonia arenaria Gray. The berries are sweet and wholesome.

Pihála, Portulaca retusa Engelm.? Plant eaten by Hopi.

Tü'mna, Solanum Jamesii Torr. The wild potato. The tubers are gathered, mixed with clay, and eaten.

Only two narcotics are known to the Hopi, one being Píba, or tobacco, the two species gathered being Nicotiana trigonophylla Duval and the N. attenuata Torr., and the other Shemóna, Datura metaloides DC. The use of the latter is extremely rare and is much decried by the Hopi.

Two plants are chewed in the way of chewing gum, Kopóna, Sphæralcea augustifolia Spach., and Poáwi, Eriozonum corymbosum, the mucilaginous stems of which are employed.

Ishü, Stanleya albescens Jones. The leaves are boiled and eaten in the spring.

Pasípna, Astragalus pictus filifolius Gray. The roots are eaten raw as a sweet.

Yowípsi, Ribes cereum Dougl. The berries are eaten.

Yün'yü, Opuntia. The stem is boiled and eaten in the spring when food is scarce.

Samóa, Yucca baccata Torr. The fruit is eaten.

Hési, Calochortus aureus Watson. The root is eaten raw.

Sü'rswa, Chenopodium album L. The leaves are boiled and eaten with fat.

Posüüh, Amaranthus blitoides Watson. The seeds were formerly used as food.

Nanákopsi, Monarda citriodora Cerv. This plant is boiled and eaten only with hares.

Mü'ha, Lygodesmia grandiflora T. & G. The leaves are boiled with meat.

Lüktánkya, Artemesia dracunculoides Pursh. "In the early spring the leaves are gathered and brought home, baked between hot stones, and eaten after dipping in salted water" (Fewkes).

Kuranto (Spanish), Coriandrum sativum L. The plant is dipped in stew and eaten as a condiment.

Súle, Mentzelia albicaulis Dougl. Seeds are parched and ground; it is eaten in pinches from the wicker tray in which it is served (Fewkes).

Hoyávako, Atriplex confertifolium Watson. Its scented leaves are boiled in the water used to mix corn pudding.

House-building

Wórshi, Muhlenbergia pungens Thurb. Bunches of this grass are used in the upper layer over the kahabi brush in the roofs of houses.

Kahábi (no specimen). Brush from this shrub used as the first layer in the ceiling and roof.

Pashihürpbe. Populus monolifera Ait. For roof beams. The most valuable tree known to the Hopi, by whom it is planted.

Móhu, Yucca angustifolia Pursh. Woven to make hoods for fireplaces.

Dress and Adornment

Hóko, Juniperus occidentalis Hook. The seeds are pierced and strung as beads. The ancient graves yield examples.

Avátsi, Pentestemon ambiguus Torr. The flower is worn for adornment.

Ishákana, Verbesina enseloides B. & H. Flower worn by children in the hair on the forehead.

Wórshi, Muhlenbergia pungens Thurb. The flower stem is used for hair-brushes.

Wupámansi, Castilleia linariæfolia Benth. The flowers are worn for adornment by the girls. The name means "the great girl flower." It is one of the very few attractive and beautiful flowers of this region and may be appropriately called the Hopi national flower.

——, Solanum elæaginifolium Cav. The yellow seed apples of this plant are often strung for necklaces.

Domestic Life

Hanoshirápi, Bigelovia graveolens Gray. So named because the Tewans of the pueblo of Hano carry great bundles for firewood.

Hóko, Juniperus occidentalis Hook. Called "arrow wood." The principal firewood; from the bark the slow match is prepared.

Kotókshiluvi, Parryella filifolia T. & G. The twigs of this plant are used for snow brooms.

Tü'vü, Pinus monophylla Torr. & Frem. Excellent firewood. The gum is used for chewing and in the arts.

Móhu, Yucca angustifolia Pursh. The root is used for soap, notably for washing the hair in religious ceremonies.

Topílchi, Humulus lupulus L. Wild hops are used to make yeast, according to Mongwe.

The shells of gourds are much prized for dippers, funnels, and other vessels.

Towü'vapi, Boerhavia erecta L. The plant, which possesses sticky leaves and stems, is sometimes hung in the houses to catch flies.

Samúa, Yucca baccata Torr. The root is used for soap.

Mügütka, Senecio douglasii DC. The top of this plant is used as a brush to remove the hair spines from prickly-pears.

Arts

Sü'ori, Atriplex canescens James. The ashes of this plant are used to give a gray color to piké.

Kómo, Amaranthus sp. Cultivated in terrace gardens around the springs and used for dyeing piké red.

Komútoshu, Amaranthus Palmeri Watson (?). From the seeds a red dye is prepared for Kachina piké, a paper bread consumed during the Kachina dances.

Oháishi, Thelesperma gracile T. & G. The whole plant is used to make red-brown dye for basket splints.

Akàüshi, Helianthus petiolaris Nutt. The blue dye which the Hopi impart to their blankets is prepared from the seeds of the sunflower.

Ása, Sisymbrium canescens Nutt. The seeds of this plant are ground up in a stone mortar, forming an oily liquid, which serves as a medium for the iron paint used in pottery decoration.

Mŏhu, Yucca angustifolia Pursh. This plant has many uses in the arts for basketry, paint brushes, tying material, etc.

Kotókshiluri, Parreyella filifolia T. & G. The ashes of this plant are used to color piké.

Tü vü, Pinus monophylla Torr. & Frem. The gum was used as cement in the ancient turquois mosaics as it is in the modern. A few specimens of pottery made by Nampio are glazed with piñon gum.

Shemótala, Calamovilla longifolia (Hook) Hack. The long canes are neatly twined into the ceremonial wedding-blanket covers.

Pieces of gourd are made into smoothers for pottery.

Cübi, (?) Rhus trilobata Nutt. The twigs are used for coarse basketry.

Samóa, Yucca baccata Torr. The root is used for soap and the leaves for basketry.

Patü'saka, Panicum autumnale Bosc.

Tákashü, Hilaria Jamesii Benth. The grass used by women in making the coiled baskets.

Asapzrani (Spanish), Carthamus tinctorius Linn. Saffron, used to dye piké yellow.

Agriculture and Forage

Harü'si, Bouteloua oligostachya (Nutt.) Torr. Forage grass for animals.

Pawia, Franseria Hookeri Nutt. Food for sheep.

Poshíotosü, Amaranthus blitoides Watson. Also eaten by sheep.

Tahoyókpi, Chenopodium olidum Watson. Also eaten by sheep.

Kwákwi, Sporobolus cryptandrus strictus Scribn. Fine forage grass.

Sä'obi, Atriplex canescens (Pursh.) James. Eaten by horses.

Takáshü, Hilaria Jamesii (Torr.) Benth. Good grass for horses.

Tavótka, Eurotia lanata Moq. Horses like it very much. The twigs are eaten by them in winter.

Pĕzrü, Aristida purpurea Nutt. Bad forage for animals on account of the awns.

Kwarü'tushü, Munroa squarrosa Torr. This grass is covered with fine down, which causes horses to cough and choke when they attempt to eat it.

Taüñwei, Oxytropis Lambertii Pursh. This is the "loco weed," so injurious to horses.

Homítskapü, Krynitzkia sp. The evil burs get into wool and in many ways are troublesome to man and beast.

Brush from a number of plants is employed in the cultivated fields for windbrakes or sand sheds. Brush is also placed in gullies to prevent washing, and brush dams are made to form level places by the collection of the sediment. Crops are planted on the deltas so formed.

MEDICINE

Chachâume, Townsendia Arizonica Gray. Women boil the plant to make tea to induce pregnancy.

Chiuíña, Astragalus mollissimus Torr. Said to be a good medicine for headache; the leaves are bruised and rubbed on the temples.

Monáhaña, Artemisia Canadensis Michx. Rubbed up and placed on the temples for headache.

Máiětka, Senecio douglasii DC. Rubbed on the limbs for rheumatism and soreness of the muscles.

Mamáuti, Aster sp. Tea is made from the flower and given to young girls to make them fruitful.

Pŭñá, Polygonum ramosissimum Michx. Ground on a stone and used as a plaster; the effect is heating. Women drink a tea infused from the leaves to increase milk.

Poâhi, Erigonum corymbosum (?). Infusion made and drank by women to expedite child-birth.

Tahoóvapi, Gaura parviflora Dougl. Tea made from the root for snake bite.

Tŭwázhriapi, Ranunculus cymbalaria Pursh. Known by the Hopi as "Navaho medicine."

Wŭtákpala (no specimen). Rubbed on the breast or legs for pain.

Ishákana, Verbesina enseloides B. & H. Used on boils or for skin diseases.

Kawíkana, Croton Texensis Muell. Taken as an emetic to relieve the stomach.

Koicháña, Allionia linearis Pursh. Boiled to make an infusion for wounds.

Kokyáña, Brickellia Wrightii Gray. Called "Navajo tea."

Lakápa (Spanish), Phoradendron juniperinum Engelm. The Navaho and Hopi make a beverage, which they say is like coffee, from this mistletoe. A larger species on the cottonwood tree, called "lo mapi," is used as medicine.

Maíibĭ, Bigelovia douglasii stenophylla Gray. Infusion used for bathing bruises and wounds.

Ohá'ishi, Thelesperma gracile T. & G. Tea for headache is made from this plant.

Pámmavi, Gutierrezia euthamiæ T. & G. Tea for fever is made from this plant, in combination with three other plants.

Piiñá, Polygonum ramosissimum Michx. Ground on a stone and used as a heating plaster.

Poâhi, Erigonum corymbosum (?). Infusion drank for disorder of the stomach.

Tavótka, Eurotia lanata Moq. One of the ingredients of tea for fever.

Tawázhriapi, Linum rigidum Pursh. Taken as tea for stomach disorder.

Tŭpeloválchu, Chrysopsis villosus Nutt. Pain in the chest cured by a tea made from the leaves and flowers.

Wĕi, Aplopappus sp. The root is boiled to make a tea for cough.

Páláñi (no specimen). The plant grows at Awatobi, where the roots are gathered to make tea for colds.

Kütsibsü, Biscutella wislizeni B. & H. The leaf is dried, rubbed to a powder, and sprinkled on wounds.

Sübi, Rhus trilobata Nutt. The buds are regarded as medicinal.

Napalü'ña, Artemisia tridentata Nutt. "An infusion of the leaves is drank by a person whose ailment is supposed to be in the ilium."

Püñi, Asclepias verticillata L. An infusion is drank to increase the flow of milk.

Religion

Shĕm'tala, Calamovilfa longifolia (Hook.) Hack. Carried in the Humis Kachina.

Chuóshi, Aster sp. Mixed with sacred tobacco.

Maíbi, Bigelovia douglasii stenophylla Gray. A component of the Shaqua paho.

Tüminala, Martynia proboscidea Glosc. Part of the soyalana paho; plant male.

Hovápi, Artemisia tridentata Nutt. Used in the flute paho.

Pámnavi, Gutierrezia euthamiæ T. & G. Used in the snake paho.

Tewi, Sarcobatus vermiculatus Torr. One of the four sacred kiva fuels.

Pashehürp'bi, Populus monilifera Ait. The peeled shoots are used in preparing the pahos or prayer-sticks for all ceremonies. Tihus, parts of masks, fire-sticks, plume boxes, etc, are carved from the wood.

Hohoyána, Physaria Newberryi Gray. "This plant is one of the ingredients of the snake charm or antidote drank after the Snake dance by all who have taken part as snake priests" (Fewkes).

Sorósi, Delphinium scaposum Greene. Flowers are ground with corn to make blue meal, "blue pollen," for the flute altar.

Cübi, Rhus trilobata Nutt. Twigs used for ceremonial purposes; the branches are one of the four ceremonial kiva fuels.

Póna, Equisetum lævigatum Braun. Dried and ground with corn to make the sacred bread called ponoviki.

Hési, Calochortus aureus Watson. The flowers and seeds are ground with meal to make yellow pollen for the flute ceremony.

Kü'iña, Artemisia frigida Willd. Used in pahos.

Süóvi, Atriplex canescens James. One of the four kiva fuels.

Sivwípi, Bigelovia Howardi Gray. The dried plant is one of the four kiva fuels. "An infusion of the flowers is used to color a chalky stone employed as a personal decoration during ceremonies" (Fewkes).

Kivi, Lycium pallidum Miers. The entire shrub is used in the Niman Katcina.

Pi'ba, Nicotiana attenuata Torr. Smoked on all ceremonial occasions.

Cotton is cultivated almost exclusively for ceremonial purposes, its chief consumption being for the string employed in assembling the elements of the pahos.

FOLK-LORE

Kolnákawa, Erigonum Thomasii Torr. The big rat, Kalna, eats this plant; hence its name.

Pámnavi, Gutierrezia euthamiæ T. & G. This plant, which grows with the mäíbí, Bigelovia douglasii stenophylla Gray, is called the child of the mäíbí.

Pi'iñá, Polygonum ramosissimum Michx. This plant exudes a milky substance when broken, and hence is used to increase a scanty flow of milk in nursing mothers.

Powü'üsi, Abronia micrantha (Torr.) Choisey, and A. fragrans Nutt. Placed on a child's head to induce sleep.

Sóayañ'a, Alliona nyctaginea Michx. (Oxybaphus nyctagineus Sweet). This plant is named for the bat. When babies will not sleep in the daytime they are washed in a decoction of this plant, because the bat sleeps during the day.

Tüminala, Martynia proboscidea Glosc. The plant is male; gender of plants.

Hohoyáña, Physaria newberryi Gray. Named from the Asida rimata or prayer beetle and nahu charm.

Ása, Sisymbrium canescens Nutt. One Hopi clan bears the name of this plant. (See legend given by Dr Fewkes in *The American Anthropologist* for January, 1896, p. 15.)

Léhü, Oryzopsis cuspidata Benth. Also the name of one of the clans.

Máryitka, Senecio douglasii DC. The name means "mole corn." "Many plants are thus assigned to animals supposed to hold them in special favor" (Fewkes).

The following summary, in which the duplications have not been eliminated, gives the number of plants falling into the general classes. As there are probably not over 150 indigenous species in the environment, this list shows the thorough way in which the Hopi have made use of their plant surroundings.

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Comparatively late in the study of the new science of ethnology has attention been called to the preëminent importance of the

environments of tribes. The idea has been known for centuries; the scientific renaissance brought it into prominence along with more careful methods of observation and more accurate division of the field into special subjects for observation.

While tribes have been modified by environment and by changes in environment, too much, perhaps, has been attributed to it, from incompleteness and lack of observation.

Years ago some writer propounded a theory for the various complexions of the human race, explaining that men became lighter in proportion to their distance from the equator. Buckle produced also many similar delusive generalizations, giving too much influence to material surroundings and too little to the genius and brain of man.

Without doubt, in the coming years a sufficient body of conscientiously observed facts will be collected from which generalizations may be deduced. There are, no doubt, subtle influences due to life in the desert, the plain, the mountains, and the seashore and islands, ease or difficulty of intercourse, which modify peoples. It is well understood that there is a relation between environment and health, and that the struggle for subsistence makes or unmakes peoples.

The Hopi are one of the most interesting of the North American tribes. Their long isolation from geographical conditions has kept them unmodified by the influences which have changed most native tribes. In the last few years the wedge of civilization has entered, however, and before long it will be too late to make the studies which are so desirable and of so much importance to the science of ethnology. It is earnestly hoped that the Hopi may be thoroughly studied in regard to their natural environment, ceremonials, and arts as speedily as possible.

THE LAMBORN BEQUEST.—By the will of the late Dr Robert H. Lamborn the Academy of Natural Sciences of Philadelphia has been bequeathed his entire estate, aggregating about $200,000, the income to be used for biological and anthropological research. It is expected that the Academy will now be enabled to have a curator of archeology, its excellent collections in that line having necessarily been somewhat neglected in the past owing to the lack of funds.

STONE IMAGES FROM TARASCAN TERRITORY, MEXICO

FREDERICK STARR

In the December number of the *American Anthropologist* appeared an interesting article by Dr Cyrus Thomas on stone images from mounds and ancient graves of our southern states. The author called attention to "a somewhat conventionalized form indicative of local origin." Some eight specimens were described or referred to, four of which were illustrated in the paper. Two others of the eight, while not pictured by Dr Thomas, are figured in Thruston's *Antiquities of Tennessee*. There are but two points in which all of the eight agree—(1) the sitting posture and (2) the slanting, upraised face. The position of the hands and feet varies considerably. In three out of the eight the lower part is said to be incomplete—but rudely, if at all, worked to shape. General Thruston's specimens are notable in the agreement they show in the round, broad faces. The headdress or hair varies considerably. To show this we may tabulate the eight specimens thus:

1. Castilian Springs, Tennessee—fillet.
2. Castilian Springs, Tennessee—cap.
3. Bartow county, Georgia—knot.
4. Bartow county, Georgia—handle.
5. Trousdale county, Tennessee—head bare.
6. Smith county, Tennessee—head bare.
7. Roan county, Tennessee—chignon.
8. Union county, Illinois—triangle incised on back.

All of the specimens are emphatically stated as from within the "stone-grave area." This is likewise the area of the carved or engraved shell-gorgets.

Stone figures of a very similar type to this are found in one part of Mexico. In the Tarascan region of the states of Michoacan and Jalisco the seated figure of stone with upraised face is both characteristic and common. We may describe and illustrate several of these. It would be easy to mention many more.

No. 1, from Kalatemba, is in the museum of the state college at Morelia, Michoacan. It is of sandstone and is of indifferent workmanship. The back is nearly vertical and plane. The hands, which are but rudely indicated, rest upon the chest.

XUM

The lower part is badly made. A small prominence near the base is probably a rude representation of the sexual organs. The face is absolutely comparable with those of General Thruston's figures, being round, broad, flat, and slanting. An incised line across the head (partly concealed by the label) apparently indicates a headdress. The figure is seven and a quarter inches high. (See figure 1, plate v.)

No. 2 is from near Tzintzuntzan. It is a sandstone figure of a female. In general character, head position, genitalia, etc, it is much like the preceding. The hands rest upon the chest and the arms are folded against the sides. The headdress, with incised lines at top, is somewhat shown in the cut (figure 2). The woman bears a child strapped to her back; the infant faces backward. The height of this figure, which is also in the Morelia museum, is five inches.

No. 3, from Tzintzuntzan, was presented to me by Mr H. P. McCormick. It is of a reddish-brown stone, in texture much like sandstone. It is very like the two preceding, but the legs are seen to be bent under the figure (figure 4, plate v). The broad, round, upraised face with eye-holes and mouth simply scooped out, and with low, broad nose, is of the same type as the above and as General Thruston's specimens. There is no cap or headdress. The hands and arms are rudely made, but distinct and in the usual position. The figure measures four inches high. (See figures 3, 4.)

No. 4 is the most remarkable piece of work I have seen from Tarascan territory. It is from near Guadalajara, in Jalisco, and was presented to me by Mr D. A. Wilson. It is made of a fairly compact, olive-gray material. It is a grooved axe. The whole surface is polished; less about the groove than elsewhere. The edge, made with much care, is fairly sharp. The upper end is a finely executed human head, with the face upraised at about the usual angle for this type. The groove comes at the location of the neck, while the arms, carefully defined at the sides, are bent so as to bring the hands—not detailed—to the upper part of the chest. The figure is not squat, but seated, and the bent legs are admirably developed. Examining the head carefully, we find the face broad and round, the eyes carefully worked out, the mouth projecting and with the commissure of the lips marked, the nose well made. Over the head fits a headdress like a close-fitting cap, covering the ears, which cause it to pro-

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3

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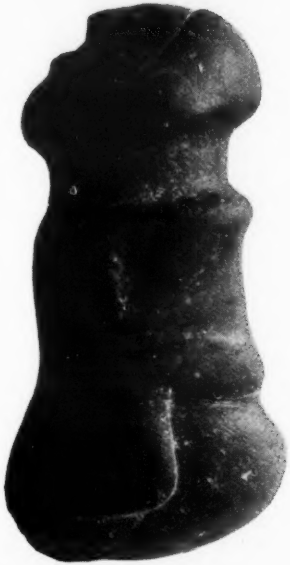
STONE IMAGES FROM TARASCAN TERRITORY, MEXICO

XUM



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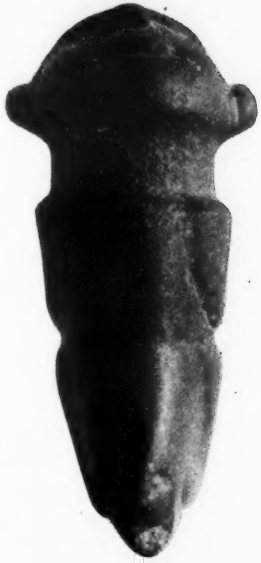

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VIEWS OF A FIGURINE AX FROM MEXICO

ject in two regular rounded prominences. The pictures convey a better idea of this pretty piece than does a description (figures 5, 6, 7, plate VI). This specimen measures four and a half inches.

This occurrence in Tarascan territory of stone figures with upraised faces of the same type as the Tennessee specimens appears to me of considerable interest. I have recently called attention to the finding in the same part of Mexico of a beautifully carved shell gorget, strictly comparable with those of the stone-grave area.[1] The occurrence of a second so characteristic type in the two areas is certainly curious.

As to the meaning of the upturned face, I am personally inclined to believe that Haygood was right in considering it to indicate adoration. I cannot find in any of the figures given by Thomas or Thruston, nor in the Mexican specimens, any reason for considering the heads artificially deformed; in fact, every specimen distinctly evidences against such a view.

CONNECTING LINKS.—Volume 1, part 4, of the Publications of the Louisiana Historical Society has just appeared. If the reader will turn to plate II, figure 1, opposite page 25, he will see a handle of a dish very much in the form of the head of a monkey or other animal. Opposite page 372 in the report of the Smithsonian Institution for 1876, in my article on the Latimer collection, will be seen six handles of dishes very much of the same form and motive, and presenting a very striking similarity. This type of modelled handle luted on to dishes has been treated by Professor William H. Holmes, and in these two examples we have Porto Rico on the one hand and the mound in Louisiana brought into interesting comparison. It will be recollected also that Professor Holmes called attention to the meander pattern, figure 9 in the same paper, and in the paper on the Guesde collection, in Guadeloupe (Smithsonian Report, 1884, pp. 828–832), I have spoken of the weaving of bands of cotton around the arms and legs of figures; also historically mentioned with regard to the Indians of Louisiana.

These little threads of connection are very interesting in the light of discoveries which have lately been made in southern Florida by Mr F. H. Cushing. O. T. MASON.

[1] Proc. Davenport Acad. Sci., vol. VI, pp. 173–178.

VIEWS OF A FIGURINE AX FROM MEXICO

XUM

DEATH-MASKS IN ANCIENT AMERICAN POTTERY

F. S. DELLENBAUGH

In depicting the human face, the natives of North America have not been successful. Particularly is this the case in what is called the Atlantic group—that is, those tribes east of the Rocky mountains. In Mexico some of the ancient people had achieved a fairly high mark in the direction of art, and this skill seems to have filtered in varying degree along the Pacific coast as far as the northern limit of the present Haida Indians; yet even in Mexico the human face was not treated broadly and dexterously, but was customarily drawn or modeled as elsewhere—more or less weakly, without ears, in profile. The ear was not shown or was hidden by some kind of ornament. Much of the work of the Pacific group commands respect from an art point of view, and sometimes admiration; but throughout the Atlantic group, excepting the graceful forms of the mound-builder pottery, it may be said there was little art development. Some of the moundbuilder pipes are interesting, and exhibit a moderate degree of dexterity in modeling objects familiar to them, but they seldom endow the object with its rightful beauty or express it with accuracy or artistic force.

When we come to the human head and face, the attempts to reproduce it are generally, from an art standpoint, merely ludicrous. What, then, are we to conclude when suddenly we come upon a group of funeral jars from Arkansas bearing some truly remarkable and accurate human faces? We may select for examination the best of these image vases, so far as I know them—the one so accurately engraved for Mr Holmes' article in the Fourth Annual Report of the Bureau of Ethnology, and numbered figure 420, page 407. Are we now to follow a time-hallowed custom and deduce from the extraordinary excellence some equally extraordinary theory? Say, perhaps, that while out sailing some pupil of Phidias was blown out of his course by an easterly gale and, scudding past the Pillars of Hercules, landed on the Atlantic coast of North America, whence immediately he proceeded inland to Arkansas for the express purpose of teaching sculpture and executing these strangely perfect vases;

or shall we rather say a tribe of Aztecs came up to Arkansas and then went home again? Hardly. Better let us accept the easiest, most probable solution, and admit that ordinary redmen, who lived for ages in the region, are responsible for these unusual vases, and we will then try to explain how it came about that a few should have been able to acquire such great and rare skill; for the free-hand skill that could produce the vase under discussion must assuredly be nothing less than great and rare.

FIG. 1.—Head-shape vase from Pecan Point, Arkansas (½).

Here we look on a face perfect in its proportions, accurately modeled, and, above all, depicting death with a master-hand; yes, more, presenting to the spectator death itself as it seized this personage in the long-forgotten past. Here is death present with us as plainly as it is in the well-preserved features of an Egyptian mummy. He is certainly a great artist who can do this. How did our untutored redman achieve this wonderful result? How perpetuate the awful silence of a mouth the fleeting spirit left ajar? How eternalize the eyelids a short time

before closed to light forever, now striving to open to eternal darkness? With marvelous fidelity this jar represents these things; presents them with a genius that, notwithstanding the centuries gone, enables us to sight the shadow of the Death Angel's wings!

Now, is it likely that the redskin artist who never succeeded in modeling any other object accurately should so wonderfully triumph with the most difficult object in all nature, the human face? I think not. What, then, is the explanation? To me it seems perfectly simple. A process of some kind must have been used; probably the process known and used for ages by sculptors. Clearly the face on this jar is a death-mask. Soft clay was pressed upon the dead features, and when sufficiently dry it was removed and other soft clay thinly pressed into the mold obtained. The mask thus made was built upon till the jar before us was completed. In this conclusion there is nothing improbable. Some accident revealed the method to the red artist, and it was utilized in making these urns for burial with the remains of distinguished individuals. In no other way, it seems to me, can this vase be satisfactorily explained. Mr Holmes describes the vase as follows:

> The finest example yet found is shown in figure 420. In form it is a simple head, five inches in height and five wide from ear to ear. The aperture of the vase is in the crown and is surrounded by a low, upright rim, slightly recurved. The cavity is roughly finished, and follows pretty closely the contour of the exterior surface, excepting in projecting features such as the ears, lips, and nose. The walls are generally from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch in thickness, the base being about $\frac{3}{8}$. The bottom is flat, and takes the level of the chin and jaws. . . . The face cannot be said to have a single feature strongly characteristic of Indian physiognomy. We have instead the rounded forehead and projecting mouth of the African. The nose, however, is small and the nostrils are narrow. The face would seem to be that of a youngish person, perhaps a female. The features are all well modeled, and are so decidedly individual in character that the artist must have had in his mind a pretty definite conception of the face to be produce as well as of the expression appropriate to it, before beginning his work. It will be impossible, however, to prove that the portrait of a particular personage was intended. The closed eyes, the rather sunken nose, and the parted lips were certainly intended to give the effect of death. The ears are large, correctly placed, and well modeled.

In this Mr Holmes assumes, apparently, that the artist of this remarkable vessel modeled it free-hand without the object before

him—in other words, that it is purely ideal. I am of opinion this would have been an impossibility. The redman never lived and I believe never will live who could impress such individuality on clay, either from his imagination or from the model. Such conception and execution would be remarkable even in an artist descended from an esthetic race, and there is no evidence that an esthetic race existed on this continent in any precolumbian time. I believe this vase and similar work have been regarded by some as evidence of the former occupancy of this land by a race different from the redmen, but its very accuracy is evidence against such a theory. A race so different from the redman as to be capable of producing a face like this would have left other and abundant testimony of their skill. They would, in all probability, have left hands and feet; arms, legs, and torsos, as well; for without constant practice in these things how could they have attained this perfection? Art is certainly a growth in any land, not an explosion.

There is only one way, then, in my opinion, that this vase and its companions could have been produced by any being who ever occupied the territory where it was found, and that is by the method I have described. The cut of figure 420, herewith reproduced in our figure 1, is half size. I can discover no special resemblance to African features. An eminent artist to whom I showed the cut, and who did not know the connection, thought the features resembled those of the Chinese. All that I can see in them is a young redskin, somewhat distorted by disease and death. The age might be anywhere from ten to sixteen, if a male, and fourteen to twenty, if a female. The nose seems to be one that might become strongly aquiline. The face is not, after all, as small as the size of the jar at first glance would seem to establish, and this discovers a discrepancy in scale between it and the remainder of the vessel, proving that when the potter left the guidance of his mold or cast he was lost, and rounded up the vase too soon and too small to accord with the features. Not all the potters were entirely successful with their molds, as some faces show by considerable distortion, due doubtless to clumsiness and lack of care in the handling.

For the purpose of comparing the chief portions of Mr Holmes' figure 420 with some standard, I measured the features of two white boys representing the average at about ten years, and also

an adult white man and woman and placed the measurements beside those of the vase (the vase measurements were made from the engraving). The accompanying plan (figure 2) shows that as between the white boys (whose measurements were identical) and the vase there are no great differences. The forehead of the white boy is one-half inch higher, but a redskin lad of about the same age might easily have this difference, while the potter also may not have extended his cast to the hair-line exactly, or he may have found it desirable to trim down the rough edges of the mold along the top, on account of its sticking to the hair, before removing it from the face. The white boy is one-half inch wider across the eyes. The nose is the same to the base from the eyebrow line. The upper lip is the same. The chin on the vase is one-fourth inch longer, but as an allowance of about that amount

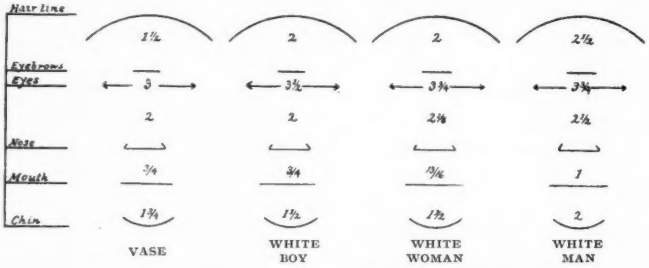

FIG. 2—Comparative measurements of vase and human heads.

must be made for the open position of the mouth, the measurement is practically the same. This gives a very close resemblance between them, and leads to the inference that the face on the vase is that of a lad of about sixteen.

The ears have several perforations in each, which Mr Holmes thinks reveal a custom of the tribe. With this I must differ, for the reason that at the top of the face is a perforated knob, which must have been made for suspension by a cord. In that case two other cords were necessary to hold the vase in balance, and these two cords would be obliged to come down at the back and on each side of the head for attachment. The only available projections for such an attachment are the ears, and the perforations, it seems to me, were for that purpose. The ears being thin, the cords were probably woven in and out, for strength, through the

several perforations. On the other hand, the knob, being thick and strong, needed but one hole for the cord attachment. The ears, being of good shape and correctly placed, were probably cast along with the face, anatomical correctness not being within the redman's grasp except by mechanical process of some kind. The engraved devices were executed, says Mr Holmes, after the clay had become hard. The reason for this was that on account of the molding process it could not be done before. The vessel would require drying before the mold could safely be removed. The interior of the wall follows the exterior closely except in projecting features. The potter, finding it difficult, as well as unnecessary, to work the clay evenly into the projections of the mold, filled them up more or less solidly. This would also make the features more durable and guard against openings being left to make the jar useless for its purpose. The nose, eyes, and mouth projections, then, would require to be well covered over to prevent leakage. Hence a reason why the wall inside does not follow the exterior surface of the projecting features. Altogether, therefore, it seems that this human face must have been reproduced from death by some mechanical process; in all probability the one that I have described. The face must be a death-mask; it can be nothing else.

PEABODY MUSEUM.—At the beginning of the year the Peabody Museum of American Archeology and Ethnology was transferred to the corporation of Harvard University. The Museum will henceforth be conducted by the faculty in place of a board of trustees. The faculty consists of President Eliot, Professor F. W. Putnam, and Messrs C. P. Bowditch, F. C. Lowell, and Stephen Salisbury. Professor Putnam remains the curator, as before. For some years there has been a division of American archeology and ethnology in Harvard. Professor Putnam has always been chairman, and instruction has been given in the Museum.

PROFESSOR EDWARD S. MORSE lectured before the Archeological Association of the University of Pennsylvania on January 15, his subject being Japanese Archeology. The lecture was largely attended.

NOTES AND NEWS

RECENT ARCHEOLOGIC FINDS

Florida.—Dr Charles E. Rowell recently began the excavation of a large mound in a dense forest undergrowth near Punta Gorda, which he discovered while hunting.

Georgia.—President Smalling, of the Bainbridge Graded school, and School Commissioner Bradwell have commenced the excavation of an extensive burial mound about 4 miles from Bainbridge. Many human bones in an advanced stage of decay were found, and the remains of what appeared to be pyral hearths were uncovered.

Kansas.—On the Beavers farm, 2 miles eastward from Arkansas City, are located a number of mounds from 8 to 12 feet in height, in most of which excavations have been made from time to time. Recently, however, Drs C. S. Acker and N. H. Hunt have conducted excavations in one of the earthworks, and have found what appears to be a sort of rude plinth of stone, on the top of which was a large urn-like vessel of earthenware. A quantity of ashes is reported to have been found in the vessel and on the stone structure, but no bones or implements were discovered.

Kentucky.—During the excavation of a mound near May's Lick, a short distance north of Lexington, Kentucky, under the auspices of the American Museum of Natural History, New York city, there was exposed a stone cist containing the skeleton of an adult male. The bones, stones, and even a quantity of the earth were shipped to the museum, where they have recently been placed on exhibition. The mound as it appeared when the remains were exposed is accurately shown, each bone being laid in place precisely as when found, backed by a sectional view of the mound as the excavation left it. This is probably the only mound grave that has been removed entirely and placed, with a section of the mound itself, on exhibition in a museum.

Minnesota.—It has been found that the cave which was explored in December last at Lamoille, 15 miles from Winona,

Minnesota, is identical with the cave examined and described by Jonathan Carver in 1766. According to Carver, the walls of the cave were covered with Indian pictures of buffaloes, snakes, bears, rabbits, and other beasts and were of great antiquity. The recent exploration found the pictures as described over a century ago.

New Jersey.—A report comes from Egg Harbor that Constable George Sneft, while recently hunting in a dense forest between Pomona and McKee City, discovered the remains of numerous huts that had been constructed of hickory, scattered over an area of several hundred feet. A couple of skulls, a tomahawk, some spear and arrow points, a quantity of flint chips, and several old flint-locks were found. Some of the huts were still in fair condition. The tract, which is covered by a heavy growth of underbrush, bore no evidence of having been visited for at least half a century.

New York.—Captain R. D. Wainwright, United States Army, retired, has recently found Indian skeletons in the shell-heaps near the old Billopp house at Tottenville, Staten island. Near one of the skeletons (the teeth of which were closed on the fingers of the right hand), and partly supporting it, was a ball of sand and bones, which was covered on one side with shells of land turtles.

Ohio.—Mr James Hollister and three companions, of Columbus, Ohio, while prospecting in the northeastern part of Franklin county, in the hills of Big Brush creek, discovered in limestone formation an apparently artificial tunnel 3 feet wide, 6 feet high, and extending inward for 45 feet, terminating in a chamber 12 by 9 feet and 6 feet high. Scattered about the floor of the cavern were a large number of peculiarly formed pieces of decorated pottery, a large mortar and pestle of limestone, and a number of flint arrowpoints and other stone implements.

Tennessee.—A mound on the east bank of Citico creek, Tennessee, was excavated on January 19 by a party from Chattanooga, potsherds being the principal collections unearthed. These, with the other relics, were placed on exhibition at the Southern hotel, Chattanooga, where they attracted considerable attention.

Seven extensive mounds have been discovered at the mouth of White creek, near Towstring, Tennessee, while along Tennessee river, within 10 miles of the point named, many mounds are reported.

Mexico.—Mr L. F. Janner and a party of five assistant archeologists from Philadelphia have begun the excavation of an ancient ruined city in the state of Chiapas, west of the city of that name. The ruins were discovered several months ago by Mr Janner while exploring that region.

The Yakuts of Siberia.—As is well known, it has been much disputed whether the Yakuts are an indigenous race or have migrated from more southern latitudes, the latter view being more generally accepted at the present day. According to their own traditions, they are descended from two famous marauders, who, having made themselves objectionable in their native country, were obliged to fly northward, and, on reaching the river Lena, sailed down it to a point a little to the south of Yakutsk. M. Seroshevski (the author of *Yakuty. Opyt etnograficheskavo Izsliedovaniya*, St Petersburg, 1896) sees a confirmation of the truth of this legend, in its main outlines, in the fact that the Yakuts have names for the lion, camel, serpent, tiger, and other animals which do not exist in the present home of the people, and that these names, as well as others, have a resemblance to those used among the Turkish and other tribes of the south; but he confesses that it is very difficult to discover their original home, and almost impossible to decide at what period they migrated into their present territory.—*Scottish Geog. Mag.*

Tabu of Relationship Names.—In accordance with the universal (East) Indian custom among the Bâgarî Jâts in Sirsâ, a man will not speak of or address his wife by her name, but will use the name of her *gôt* or clan, calling her, for instanse, Gôdârî, if she be of the Gôdârâ clan. The clan name is that of her father. There is a very general rule in the Eastern Pañjâb against speaking of one's wife's father as "father-in-law" (*susrâ*). The Musalmâns of Sirsâ call him "uncle" (*tâyâ* or *châchâ*); the Brâh-

mans of Gurgâôn, Pandit Jî or Misr Jî; the Kâyaths, Râi Sâhib; the Baniyâs, Lâlâ Sâhib or Sâh Jî; the Mêôs, Chaudhrî or Muqaddam, or—a specially Mêô usage—*dôkrâ* or "old man"; insomuch that if you call a Mêô woman *dôkrî*, she will fly at you with, "Do you call me your mother-in-law?" while if you address her as *burhîyâ* (old woman in general), she will reply, "*Achchhâ betâ achchhâ!*" (Good, my son; good).—*Indian Antiquary.*

Scotch Remedies for Warts.—*Dalry.* The juice of the dandelion rubbed on warts dispels them.

Kirkmaiden. Rub the wart with the red-hot stalk of a new clay tobacco pipe. My informant has seen this done.

Kells. Rub the wart with a black snail. My informant has done this.

Kirkmaiden. Rub the wart with a black snail (*Arion niger*), and then hang the snail on a thorn-bush. As the snail wastes, the wart wastes till it is gone.

Kirkmaiden. Rub the wart with the hot blood as it flows from a pig when it is being killed. My informant had seen this done.

Kells. My informant's foot was covered with warts. A pig was being killed. He took off his boot and stocking and held the foot under the blood as it flowed from the animal. Without wiping off the blood, he put on the stocking and boot. The warts disappeared in a short time.

Dalry. Rub the wart with rain-water from a natural hollow in a rock or big stone.

Portlogan. Rub the wart with a halfpenny, tie the halfpenny in a piece of paper, and lay it on a public road. The one who picks it up gets the wart.

Kirkmaiden. My informant saw lately a young woman whose hands were disfigured with wards rub them with a copper coin. It was cast away. The warts in due time vanished.

Kirkmaiden. Cut a potato into nine pieces, rub each wart with each of the nine pieces, then tie up the pieces in a bit of paper and bury the parcel. As the pieces waste, the warts waste. My informant has done this.—*Fourth Report of the Committee on the Ethnographical Survey of the United Kingdom.*

Fanti Personal Names.—Among the Fanti negroes of West Africa every one has two names, one taken from the day of the week on which he was born and the other from some personal characteristic of his own, his mother, father, or family. Names such as *Kwesi Ata Kwesi*, the twin; *Kuyo Auan Kuyo*, the fourth son; *Kofi Burónyi Kofi*, from a white man, are very common and exemplify the ordinary method of nomenclature; but the love of parable, which is strong in the Fanti, leads him to give names, dedicatory, as it were, to some fetish, to slaves and waifs and kidnapped children. Among slave children names signifying "The gift of God," "His foot walks straight," "He brought me luck," "From the hand of God," are the rule, and it would be considered of bad augury for them to change.—*Connolly in Jour. Anthrop. Inst. G. B., Nov., 1896.*

Hemenway Expedition Collection.—A gallery in the Peabody Museum of American Archeology and Ethnology at Cambridge has been devoted to the large collection of objects made by the Hemenway Expedition in Salado valley, Arizona, and at the ruined villages of Halona and Heshota-u'hla, near Zuñi, New Mexico, in 1887–'89. The expenses of the installation were borne by the estate of Mrs Hemenway, while the excellent arrangement of the objects is due to the efforts of Mr Willoughby, one of Professor Putnam's corps of assistants.

Cliff-dweller Collection.—A collection of 365 specimens from a cliff-dwelling a mile and a half from Farmington, New Mexico, has recently been forwarded to the Carnegie Museum at Pittsburg by Mr Scott N. Morris, a civil engineer.

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Australian Message Sticks.—An aboriginal from Braidwood district, Australia, stated that when it was decided by the king and his advisers to hold a yearin or coroboree a message stick would be sent round to the different camps. A mark cut thus + on the top of the stick, on the front left-hand corner, is called *gouin*, and means "To thee, oh king," and if cut on the bottom of the stick it is called *wongo wong*, and signifies "Make haste, good friends;" and if there are several narrow strips of opossum skin attached to the end it signifies "Everything is ready." The mark S in the center of a message stick about a quarter of the way from the top, on the left-hand side, on the back, is also called *gouin*, and is cut on by the receiver, who returns it to the sender by the messenger who brought it. After the yearin or coroboree is over and if all part good friends, the message stick has the mark + on the left-hand corner of the back of it, which is called *wang wing*, and signifies "We part good friends." When a *bora* ceremony is to be held the mark × is cut in the center of the message stick, which is called *bunnon*, and signifies "We are going to have *bora*." From the statements of this aboriginal it would appear that the position of the marks on the message stick has a great deal to do with its meaning or signification, for the mark +, when cut in different places on the message stick, has four distinct names and significations, as above shown.—*Australasian Anthropological Journal.*